Listing Of The Claims

1. (Previously Amended) A method for adjusting the optical properties of an anti-reflective coating (ARC) layer comprising the steps of:

providing a preprocessed semiconductor substrate having a SiN_x or a polysilicon layer on a top surface;

depositing a dielectric ARC layer on said SiN_x or said polysilicon layer wherein said dielectric ARC layer is deposited of a material selected from the group consisting of SiO_2 and SiONH; and

annealing said dielectric ARC layer deposited on said semiconductor substrate at a temperature of at least 400°C.

2. (Previously Amended) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1 wherein said dielectric ARC layer deposited is SiONH.

3. - 4. (Cancelled)

5. (Previously Amended) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1, wherein a gas used in said annealing process is O_2.

6. (Previously Amended) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1, wherein a gas used in said annealing process is N_2.

7. (Previously Amended) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1, wherein a gas used in said annealing process is a mixture of O_2 and N_2.

8. (Cancelled)

9. (Original) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1 further comprising the step of annealing said dielectric anti-reflective coating layer at a temperature between about 400°C and about 1,000°C.

10. (Original) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1 further comprising the step of annealing said dielectric anti-reflective coating layer for a time period between about 1 min. and about 30 min.

11. (Previously Amended) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1 further comprising the step of annealing said dielectric anti-reflective coating layer for a time period between about 3 min. and about 5 min.

12. (Previously Amended) A method for adjusting the optical properties of an anti-reflective coating layer according to claim 1 further comprising the step of adjusting said optical properties of the dielectric anti-reflective coating layer to a refractive index (n) between about 2.0 and about 2.5, and an extinction coefficient (k) between about 0.2 and about 0.8.

13. (Previously Amended) A method for adjusting the extinction coefficient (k) of a dielectric anti-reflective coating layer by the steps of:

providing a SiN_x or polysilicon layer covered semiconductor substrate;

depositing a dielectric anti-reflective coating layer of a material selected from the group consisting of SiO_2 and SiONH on top of said SiN_x or said polysilicon layer; and

heating said semiconductor substrate to a temperature between about 400°C and about 1,000°C in an environment that comprises at least one of N_2 or O_2.

14. (Previously Amended) A method for adjusting the extinction coefficient (k) of a dielectric anti-reflective coating layer according to claim 13 further comprising the step of heating said semiconductor substrate for a length of time sufficient to vary the extinction coefficient of said dielectric anti-reflective coating layer by at least 10%.

15. (Original) A method for adjusting the extinction coefficient (k) of a dielectric anti-reflective coating layer according to claim 13 further comprising the step of heating said semiconductor substrate for a length of time between about 1 min. and about 30 min.

16. (Original) A method for adjusting the extinction coefficient (k) of a dielectric anti-reflective coating layer according to claim 13 further comprising the step of heating said semiconductor substrate for a length of time between about 3 min. and about 5 min.

17. (Previously Amended) A method for adjusting the extinction coefficient (k) of a dielectric anti-reflective coating layer according to claim 13 further comprising the step of heating said semiconductor substrate to a temperature between 400°C and 700°C in an environment of O_2.